

CALIFORNIA HIGH-SPEED TRAIN

Project Environmental Impact Report /
Environmental Impact Statement

Working Draft

Fresno to Bakersfield Supplemental Alternatives Analysis Report

September 2010

California High-Speed
Rail Authority



U.S. Department of Transportation
Federal Railroad Administration



California High-Speed Train Project



Fresno to Bakersfield Section

SUPPLEMENTAL ALTERNATIVES ANALYSIS REPORT

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Revision	Date	Description



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1.0 SUPPLEMENTAL ALTERNATIVES ANALYSIS REPORT

This September 2010 Fresno to Bakersfield Supplemental Alternatives Analysis (AA) Report updates the Preliminary AA Report that the California High-Speed Rail Authority (Authority) issued for the Fresno to Bakersfield high-speed train (HST) section in June 2010. It presents documentation and analysis of potential new alignment options through Kings County.

In response to concerns for the potential disruption to agricultural land and operations resulting from the alignment recommended in the Preliminary AA Report, two alignment alternatives that would pass through the City of Hanford were investigated. The intent of this investigation was to determine if through-Hanford alignments would provide reasonable tradeoffs compared with the previously-recommended alignment, which passes through agricultural land east of Hanford. The two through-Hanford alignments under consideration differed only in terms of where a potential station to serve the area might be located. Under one option, the station would be located in Downtown Hanford and under the other it would be located in the southern part of the city, approximately a mile south of State Route 198.

1.1. COMMUNITY OUTREACH

Since 2007, more than 362 presentations and briefings reached the following stakeholders:

- Elected Officials
- Chamber of Commerce
- Resource Agency Staff
- Planning and Transportation Agency Staff
- BNSF Railway Staff
- Economic Development Agency Staff
- City Councils & County Boards of Supervisors
- Local Irrigation & Farm Bureau Organizations
- Community and Business Organizations
- Trade Organizations
- Environmental Justice Groups
- Business Members

A total of 89 Technical Working Group and Public Outreach events have been held so far in 2010:

- Technical Working Group Transportation /Planning Agencies (4)
- Public Information Meetings (8)
- Stakeholder Briefings (12)
- Agency Staff Meetings (13)
- Elected Official Briefings (16)
- Community Organization Presentations (11)
- Agricultural Organizations (11)
- Property Owners (9)
- Station Workshops (5)

In conjunction with and following the June 2010 Authority Board meeting, the Authority met with and received input from a variety of community stakeholders. In Kings County, several meetings were held with agricultural interests to discuss the alignment recommended in the Preliminary AA Report. Most of those consulted through this process expressed concern for the potential effect that the alignment would have on the agricultural economy of Kings County and on farming families in particular. These concerns, which were raised prior to the June Board meeting, prompted the Authority to investigate the optional

alignments through the city of Hanford. During the process of developing the through-town alignment options, the Authority conferred with representatives of the City of Hanford and continued to meet with the agricultural community.

1.2. PREVIOUSLY CONCURRED-UPON ALTERNATIVE ALIGNMENTS

Based on the Preliminary AA Report (June 2010), a single alignment alternative (Alternative C1) through Kings County was selected to carry forward through the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) process. This alignment generally followed the BNSF railroad alignment to the south from the city of Fresno, but departed from the BNSF right-of-way in southern Fresno County near the community of Conejo to pass east of Hanford. Alternative C1 was a variation on the Statewide Program EIR/EIS Preferred Alignment, which also avoided passing through Hanford, but to the west of the city.

1.3. KINGS COUNTY ALIGNMENT OPTIONS

1.3.1. Options Considered

In response to concerns over the potential impacts to agricultural lands and operations of the recommended alignment through Kings County (Alternative C1), the Authority identified two alignment options (H1 and H2) that would essentially follow the BNSF corridor through Hanford, rather than bypassing the city to the east (see Figure 1-1). The two options, which differ principally in terms of the location of a potential station in Hanford (see Figure 1-2). General characteristics of the two alignments are as follows:

- Both remain essentially parallel to the BNSF right-of-way through southern Fresno County (including the community of Laton) and into Kings County before entering Hanford.
- The alignments would diverge from the BNSF alignment from the Kings River to approximately Excelsior Avenue in Kings County as the BNSF alignment geometry cannot accommodate high-speed train geometry.
- South of Hanford, the alignments would stay along the BNSF alignment before reaching Corcoran, at which point they would join the alignment alternatives carried forward for that area (i.e., through-town or bypass).
- Again, the alignments would diverge from the BNSF alignment north of Kansas Avenue because of track geometry.
- To avoid excessive community disruption and provide sufficient clearance above the Cross-Valley Railroad tracks, BNSF spur tracks, and SR-198, both options would be on elevated structures through Hanford and for considerable distances to the north and south.

Following are descriptions of the key features of the alignment options, focusing on their distinctions.

- **Option H1: Hanford Through-Town/Downtown Station** – Under Option H1, the alignment is designed to accommodate a station in Downtown Hanford. To accomplish this while conforming to the project engineering design standards for station tracks and platforms, the alignment would depart from the BNSF corridor approximately ¼ mile south of Grangeville Road. The alignment would then rejoin the BNSF corridor near Hanford-Armona Road, approximately ½ mile south of SR-198. This departure from the BNSF corridor would allow for the 6,000 feet of straight track required for the station. Under Option H1, the station platform would be located just north of the intersection of Lacey Boulevard and 11th Avenue, in an area currently occupied

by a shopping center. Because of its urban location, the station parking under this option would be accommodated in a multi-level structure.

- **Option H2: Hanford Through-Town/Southern Station** – Under Option H2, the alignment would generally follow the BNSF corridor all of the way through Hanford. High-speed track geometry would again require a wider curve than BNSF, from approximately Elm Street to 3rd Street. Under this option, the potential station could be located approximately halfway between Hanford-Armona Road and Houston Avenue, at the southern edge of Hanford. Because of the need for 6,000 feet of straight track required for the station and platforms, this is only area in Hanford that could accommodate a station under this alignment. Because of its suburban location, the station parking under this option would be accommodated in a surface lot.

1.3.2. Evaluation of Options

The Preliminary AA Report included an evaluation of alternatives that was organized according to five categories established by the Authority for review of alternatives throughout the entire HST system. Table 1-1 lists those categories and the evaluation measures included within them and summarize the findings of a comparison of the two through-Hanford alignment options under consideration (Options H1 and H2) with the alignment recommended in the Preliminary AA Report (Alternative C1). The full evaluation is included at the end of this report as Appendix A. Note that, for purposes of evaluation, the options are defined as the full length of the alignment as it departs from Alternative C1, which covers an area from just north of Laton in Fresno County to the northern edge of Corcoran in Kings County.

Figure 1-1: Kings County Alignment Options

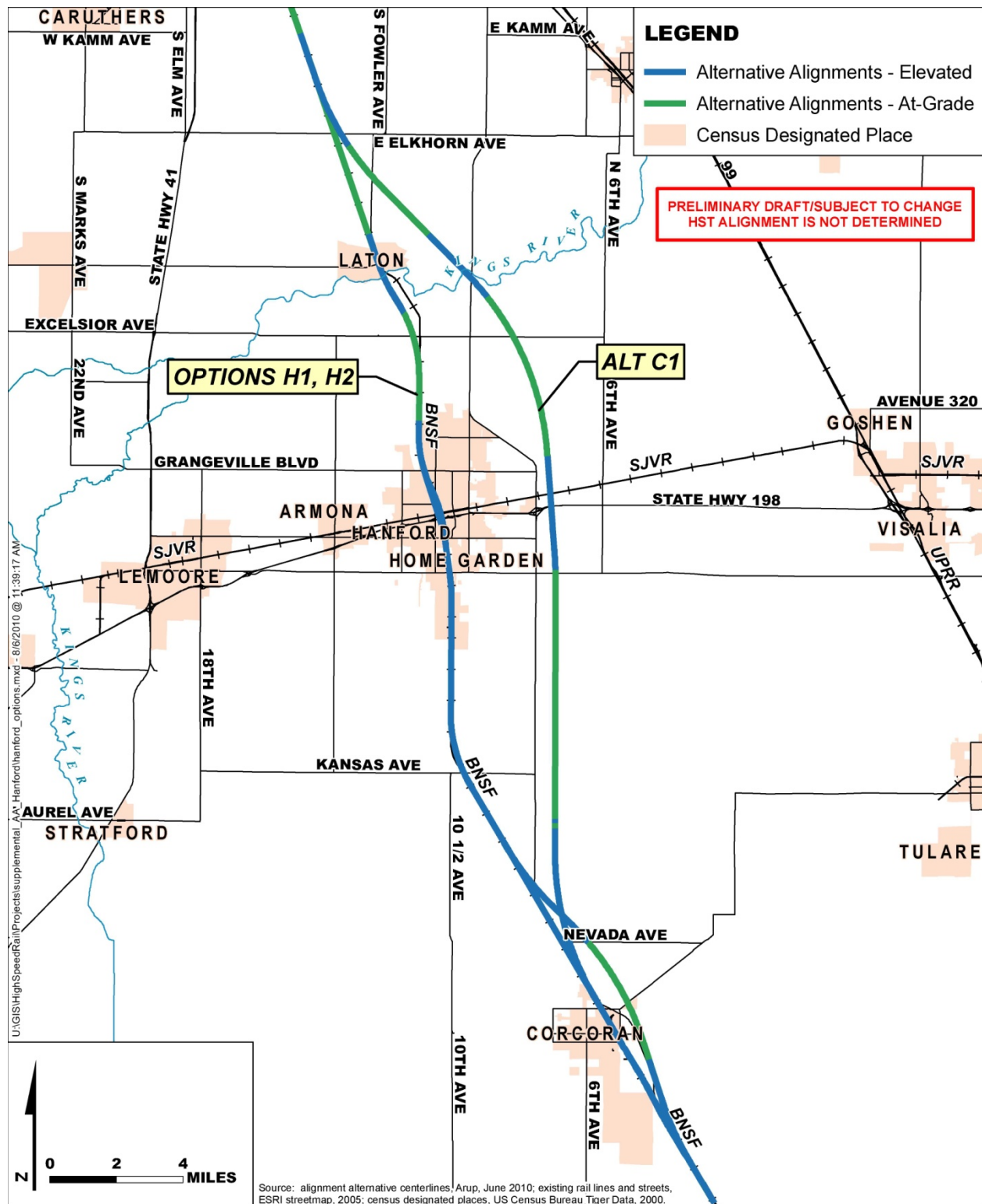


Figure 1-2: Through-Hanford Alignment Options and Potential Station Locations

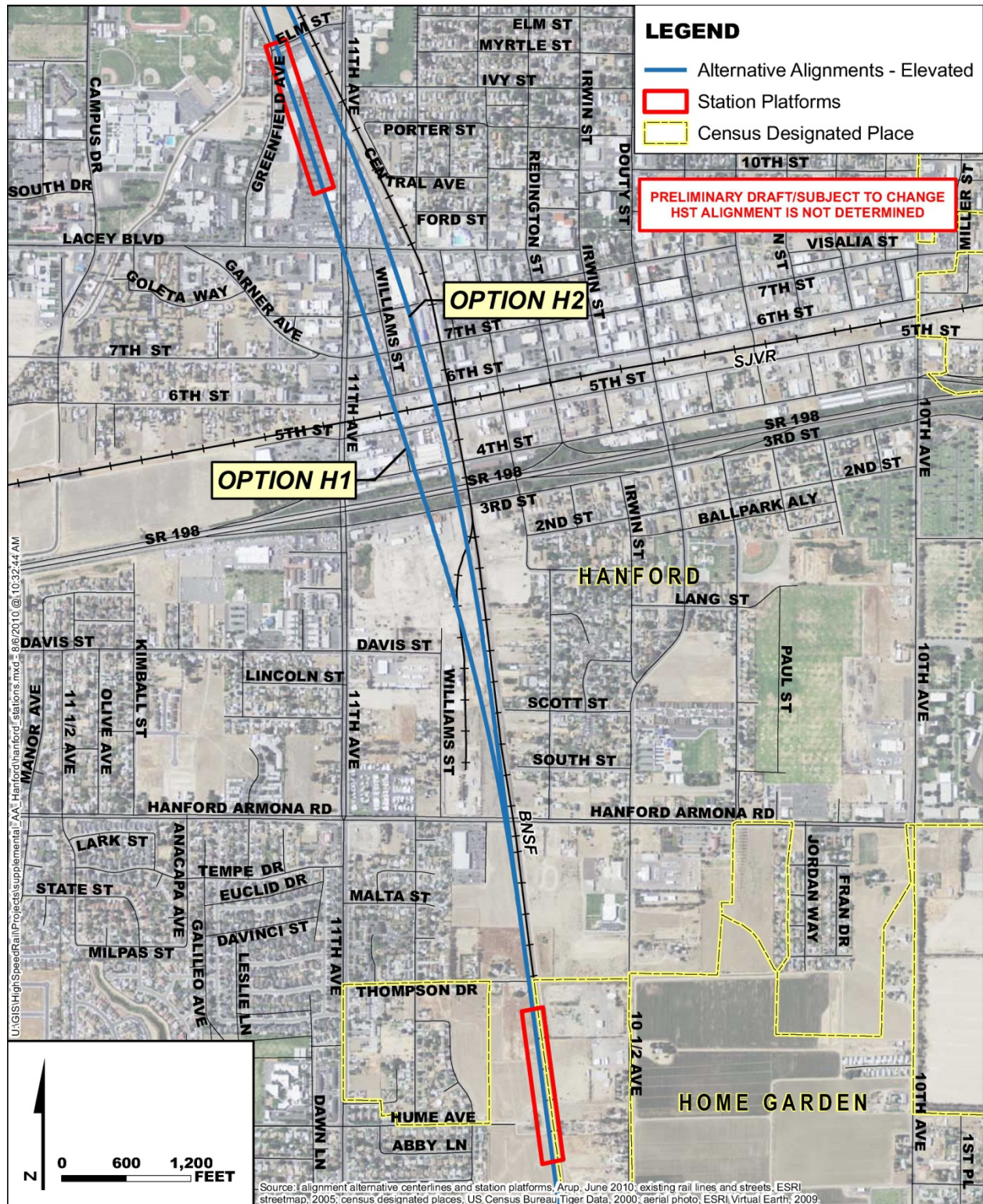


Table 1-1: Kings County Alignment C1 Comparison to Options H1 and H2 Summary
(see Appendix A for Detailed Evaluation)

Category/Measures	Evaluation
1. Disruption to Communities <ul style="list-style-type: none"> ▪ ROW Acquisition/ Displacement (Parcels crossed/acres affected) ▪ Properties with access affected ▪ Local traffic effects around stations ▪ Local traffic effects at grade separations 	<ul style="list-style-type: none"> ▪ Under C1, vast majority of property displacement is on agricultural land, with approximately 185 parcels and 630 acres affected by the HST alignment. C1 affects very little urban or suburban land (i.e., residential, commercial, industrial, public). ▪ Under H1 and H2, options would affect 46 fewer agricultural parcels totaling approximately 345 acres. ▪ Options H1 and H2 would affect between 105 (H2) and 120 (H1) more parcels, or about 28 more acres of land under both options. ▪ Local traffic effects greatest under Option H1 because Downtown Hanford station location would introduce new trips to an area that already experiences some congestion. ▪ Option H2 station location is currently undeveloped, so more opportunity to plan and design access routes; more likelihood of cut-through traffic in nearby residential neighborhoods, particularly to the west of the HST guideway.
2. Design Objectives <ul style="list-style-type: none"> ▪ Travel time (220 mph) ▪ Route length ▪ Intermodal connections ▪ Capital costs ▪ Operating costs ▪ Maintenance costs 	<ul style="list-style-type: none"> ▪ Similar Travel times. ▪ Alternative C1 would have more direct access to local highways (SR-43 and SR-198). C1 also provides more direct connection with potential east-west passenger service on the Cross-Valley Railroad line. ▪ Option H1 would provide opportunity for connection with Downtown Hanford Amtrak station. ▪ Options H1 and H2 would be more expensive largely because of elevated structures and route through already-developed areas.
3. Land Use <ul style="list-style-type: none"> ▪ Potential for Transit-Oriented Development (TOD) ▪ Consistency with other planning efforts 	<ul style="list-style-type: none"> ▪ Under Alternative C1, potential station location provides opportunity for connectivity with the Kings and Tulare region using Cross-Valley Railroad and is consistent with local growth plans and future TOD vision. ▪ Option H1 station in Downtown Hanford, could benefit from reinvestment and intensification consistent with TOD principles. ▪ Option H2 would place station in largely undeveloped area designated for a combination of industrial, commercial, public, and open space uses. H2 station could prompt adjacent development consistent with TOD principles.
4. Constructability <ul style="list-style-type: none"> ▪ Constructability ▪ Disruption to existing railroads ▪ Disruption to and relocation of utilities 	<ul style="list-style-type: none"> ▪ Alternative C1 would be less complicated to construct than Options H1 and H2 because it would pass through more areas accessible to construction equipment. ▪ Disruption to existing railroads would be similar for all Alternatives. ▪ Alternative C1 would be more disruptive to existing utilities than Options H1 and H2, as it would cross 11 more electric lines and 6 more natural gas lines.

Category/Measures	Evaluation
5. Environmental Resources <ul style="list-style-type: none"> Waterways/Sensitive Habitat Areas Cultural Resources Parklands Agricultural lands Noise and vibration Visual/scenic resources Geotechnical constraints Hazardous materials 	<ul style="list-style-type: none"> Options H1 and H2 would align with already-developed rail corridor, so they would have fewer natural resource impacts than Alternative C1, particularly for wetland habitat areas. None of the alternatives would affect cultural resources. Options H1 and H2 would affect approximately 350 acres less agricultural land than Alternative C1, about 160 acres of which would be prime. H1 and H2 has between 1,250 and 1,300 more sensitive receivers to noise and vibration than Alternative C1. H1 and H2 would have between 2,130 and 2,210 more residential properties subject to visual impacts.. Options H1 and H2 would be subject to fewer geotechnical constraints than Alternative C1. Options H1 and H2 would be exposed to more hazardous material sites.

2.0 RECOMMENDATIONS

In light of the findings cited in Section 1.0 of this report, staff makes the following recommendations to the Board.

2.1.1. Kings County Options

- Continue to carry forward Alternative C1 from Preliminary AA Report with revisions to minimize agricultural impacts
- Do not carry forward Options H1 and H2
 - Increased residential and business impact
 - Increased noise impacts
 - Does not reduce environmental impacts
 - Reduced connectivity for a potential regional station

APPENDIX A: DETAILED EVALUATION

Comparison of Proposed New Through-Hanford Alternatives with Recommended Alignment in Preliminary AA Report

(Note: Figures in boldface are relative to the figures shown under “Alignment C1.” A positive number indicates a change added to the C1 figure, while a negative number represents a change to be subtracted from the C1 figure.)

Category	Measurement	Alignment C1 Preliminary AA Recommended	Option H1 Downtown Hanford Station	Option H2 South Hanford Station
Disruption to Communities	ROW Acquisition/ Displacement	<ul style="list-style-type: none"> 185 agricultural parcels (631 acres) 5 residential parcels (1 acre) 0 commercial parcels (0 acres) 3 industrial parcels (3 acres) 10 public parcels (30 acres) 	<ul style="list-style-type: none"> -46 agricultural parcels (-345 acres) 42 residential parcels (4 acres) 21 commercial parcels (6 acres) 26 industrial parcels (10 acres) 30 public parcels (8 acres) 	<ul style="list-style-type: none"> -46 agricultural parcels (-345 acres) 32 residential parcels (3 acres) 14 commercial parcels (5 acres) 24 industrial parcels (10 acres) 34 public parcels (9 acres)
	Properties with access affected	<ul style="list-style-type: none"> At-grade profile and alignment offset from section grid and parcel lines increase possibility of access disruption. 	<ul style="list-style-type: none"> Largely elevated profile through Hanford area reduces potential access disruption. 	<ul style="list-style-type: none"> Largely elevated profile through Hanford area reduces potential access disruption.
	Local traffic effects around stations	<ul style="list-style-type: none"> Little, if any, disruption to local roadway network. Few existing or anticipated trip generators near station. 	<ul style="list-style-type: none"> Station would generate new trips in Downtown Hanford, thereby increasing potential for congestion in light of existing and anticipated development. 	<ul style="list-style-type: none"> Station area currently undeveloped, so local traffic conflicts would be limited.
	Local traffic effects at grade separations	<ul style="list-style-type: none"> Change in Level of Service not expected to have large impact on local traffic. New grade separations only required in non-urban areas. 		
Design Objectives	Travel time (220 mph)	10 minutes, 47 seconds	-5 seconds	-5 seconds
	Route length	39.53 miles	-0.33 miles	-0.32 miles
	Intermodal connections	<ul style="list-style-type: none"> Good access from SR-43 (N-S) and SR-198 (E-W). Good opportunity to coordinate access with potential passenger service on Cross-Valley RR. 	<ul style="list-style-type: none"> Better connection with N-S passenger service on BNSF (Amtrak). Worse connection with potential passenger service on Cross-Valley RR. Less direct highway access: From west via SR-198-11th Ave interchange and from east via 198 less direct (Redington St interchange). Good access to high-capacity arterial network at intersection of 11th Ave 	<ul style="list-style-type: none"> Less direct access to arterial network and state highways. No opportunity for convenient connections with passenger rail access (on BNSF or Cross-Valley RR).

Category	Measurement	Alignment C1 Preliminary AA Recommended	Option H1 Downtown Hanford Station	Option H2 South Hanford Station
			and Lacey Blvd.	
	Capital costs	Rank = 3	Rank = 1	Rank = 2
	Rank = 1 is most expensive	Includes: <ul style="list-style-type: none"> 17.89 miles elevated structure 2 BNSF Crossings 19 grade separations 	Includes: <ul style="list-style-type: none"> 1.79 miles elevated structure 2 BNSF crossings -10 grade separations 	Includes: <ul style="list-style-type: none"> 1.79 miles elevated structure 2 BNSF crossings -10 grade separations
	Operating costs	Least expensive	More expensive	More expensive
	Maintenance costs	Least expensive	More expensive	More expensive
Land Use	Potential for Transit Oriented Development	<ul style="list-style-type: none"> Station located unincorporated Kings County, adjacent to City of Hanford just beyond City's sphere of influence. Area currently zoned for agricultural uses by both City of Hanford and Kings County City. Potential station location provides connectivity with the Kings and Tulare region using Cross-Valley Railroad. Consistent with local growth plans and future TOD vision. 	<ul style="list-style-type: none"> Best of alternatives considered. Station located in commercial district on edge of Downtown Hanford. Area is currently developed, but station could prompt reinvestment and intensification consistent with TOD principles. 	<ul style="list-style-type: none"> Better opportunity than C1, but worse than H1. Station area is largely undeveloped within area designated for combination of industrial, commercial, public facility, and open space uses. Station could prompt adjacent development consistent with TOD principles, although City's plans would have to be updated to accommodate such uses.
	Consistency with other planning efforts	<ul style="list-style-type: none"> No existing plans anticipate HST alignment or service, so all alternatives are inconsistent. Through-town alternatives are generally more consistent because of presence of existing rail corridors. 		
Constructability	Constructability	No urban sections. Least complex.	One urban section.	One urban section.
	Disruption to existing railroads	Change in Level of Service not expected to have large impact on local traffic. New grade separations only required in non-urban areas.		
	Disruption to and relocation of utilities	Crossings: <ul style="list-style-type: none"> 23 electric lines 13 natural gas lines 1 water line 	Crossings: <ul style="list-style-type: none"> -11 electric lines -6 natural gas lines 0 water lines 1 telecom line 	Crossings: <ul style="list-style-type: none"> -11 electric lines -6 natural gas lines 0 water line 1 telecom line
Environmental Resources	Waterways/Habitat Areas	Crosses 5 waterways (20–75 feet wide): <ul style="list-style-type: none"> Cole Slough Cross Creek Dutch John Cut Kings River Tule River Crosses 31 acres of wetland habitat north of Corcoran, consisting of:	Crosses -1 waterways (12–75 feet wide): <ul style="list-style-type: none"> Cross Creek Kings River Murphy Slough Tule River Crosses -18 acres of wetland habitat in and south of Hanford, consisting of:	Crosses -1 waterways (12–75 feet wide): <ul style="list-style-type: none"> Cross Creek Kings River Murphy Slough Tule River Crosses -18 acres of wetland habitat in and south of Hanford, consisting of:

Category	Measurement	Alignment C1 Preliminary AA Recommended	Option H1 Downtown Hanford Station	Option H2 South Hanford Station
		<ul style="list-style-type: none"> • 16 acres of vernal pool complex areas • 10 acres of irrigation ponds • 1 acre of freshwater forested/shrub wetland and river habitat • 4 acres of unclassified wetland habitat <p>Impacts 44 acres for 2 threatened and endangered species:</p> <ul style="list-style-type: none"> • San Joaquin Kit Fox in the Corcoran area • Swainson's Hawk in vicinity of Corcoran 	<ul style="list-style-type: none"> • -12 acres of vernal pool complex areas • -3 acres of irrigation ponds • 1 acres of freshwater pond, freshwater emergent wetland and river habitat • -4 acres of unclassified wetland habitat <p>Impacts 15 acres for 0 threatened and endangered species:</p> <ul style="list-style-type: none"> • San Joaquin Kit Fox N of Laton, S of Hanford and in the Corcoran area • Swainson's Hawk in vicinity of Corcoran 	<ul style="list-style-type: none"> • -12 acres of vernal pool complex areas • -3 acres of irrigation ponds • 1 acres of freshwater pond, freshwater emergent wetland and river habitat • -4 acres of unclassified wetland habitat <p>Impacts 15 acres for 0 threatened and endangered species:</p> <ul style="list-style-type: none"> • San Joaquin Kit Fox N of Laton, S of Hanford and in the Corcoran area • Swainson's Hawk in vicinity of Corcoran
	Cultural Resources	No impacts to National Register of Historic Places-listed or CHRIS database properties.	No impacts to National Register of Historic Places-listed or CHRIS database properties.	No impacts to National Register of Historic Places-listed or CHRIS database properties.
	Parklands	No parks within quarter-mile.	2 parks within right-of-way. 4 parks within a quarter-mile of the alignment.	2 parks within right-of-way. 5 parks within a quarter-mile of the alignment.
	Agricultural lands	730 acres important 292 acres prime	-348 acres important -163 acres prime	-348 acres important -163 acres prime
	Noise and vibration	<p>129 noise receptors (within 700-1300 feet):</p> <ul style="list-style-type: none"> • 129 residential parcels <p>Vibration impacts: 30 residential parcels and 0 churches within 275 feet</p>	<p>1,248 noise receptors (within 700-1300 feet):</p> <ul style="list-style-type: none"> • 1,243 residential parcels • 3 churches • 1 clubhouse/sorority of fraternal lodge • 1 school <p>Vibration impacts: 233 residential parcels and 2 churches within 275 feet.</p>	<p>1,312 noise receptors (within 700-1300 feet):</p> <ul style="list-style-type: none"> • 1,306 residential parcels • 4 churches • 1 clubhouse/sorority of fraternal lodge • 1 school <p>Vibration impacts: 253 residential parcels and 2 churches within 275 feet.</p>
	Visual/scenic resources	59 residential parcels within quarter-mile of elevated structure.	2,132 residential parcels within quarter-mile of elevated structure.	2,210 residential parcels within quarter-mile of elevated structure.
	Geotechnical constraints	262 acres of highly erodible soils (K Factor > 0.4).	-215 acres of highly erodible soils (K Factor > 0.4).	-215 acres of highly erodible soils (K Factor > 0.4).
	Hazardous materials	No hazardous materials sites within alignment.	3 hazardous materials sites near alignment (industrial sites).	No hazardous materials sites within right-of-way.